DRINKING WATER SAFETY

IN

NEWFOUNDLAND AND LABRADOR

ANNUAL REPORT
2002

GOVERNMENT OF
NEWFOUNDLAND AND LABRADOR
Department of Environment

PREFACE

I am pleased to release the first annual report on drinking water safety in Newfoundland and Labrador. This report outlines the progress of activities and accomplishments under the multi-barrier strategic action plan for drinking water safety as well as the path forward.

Considerable progress has been made to ensure drinking water safety and restore public confidence in drinking water quality. With the implementation of the multi-barrier strategic action plan for drinking water safety, the number of boil water advisories is being reduced, water supply systems are being operated and maintained according to recognized standards, drinking water quality of all public water supplies is being monitored on a routine basis and results made available to the public. Water supply infrastructures are being improved, and water system operators have free access to the required level of training. I firmly believe that much progress has already been made to improve drinking water safety and that our future goals, while ambitious, are achievable.

I extend sincere thanks to the staff of the Water Resources Management Division, Martin Goebel, Haseen Khan, Amir Ali Khan, Keith Guzzwell, Renée Paterson, Paul Neary and Kent Slaney for their commitment, hard work and dedication in the completion of this report. I would also like to recognize and appreciate the efforts of the management and front-line staff of the four line departments, Health and Community Services Boards, municipal governments, and the Newfoundland and Labrador Federation of Municipalities in the implementation of the multi barrier strategic action plan for drinking water safety. I also want to recognize the efforts of the Drinking Water Safety Technical Working Group for its work in dealing with drinking water issues. This group is chaired by Martin Goebel and the current members are Robert Newhook, Roger LeDrew, Sam Ratnam, Darryl Johnson, Lori Anne Legge, and David Allison.

Government is committed to ensure drinking water safety and restore public confidence in public water supply systems through the implementation of the strategic plan. Significant amounts of funds have been provided during the last two years to the four government departments responsible for the implementation of the strategic plan.

Kevin Aylward
MINISTER

EXECUTIVE SUMMARY

In the report *"Source to Tap"*, released in 2001, Government made a commitment to report annually on drinking water safety. This report outlines the progress of activities and accomplishments for 2001-2002 under the Multi-Barrier Strategic Action Plan (MBSAP) for drinking water safety.

During the 2001-02 fiscal year, Government allocated $1 million to ensure safe drinking water throughout Newfoundland and Labrador. This allocation was in addition to $10 million of the multi-year Department of Municipal and Provincial Affairs Municipal Capital Works program which is designed to help municipalities install or upgrade water disinfection systems.

An additional $1.5 million was approved for drinking water initiatives in the 2002-03 budget. The Department of Environment will spend $530,000 to implement an on-site operator training program and to expand drinking water quality monitoring. The Department of Government Services and Lands will spend $458,000 to hire seven Environmental Health Officers to expand bacteriological water quality monitoring. The Department of Health and Community Services will spend approximately $500,000 to increase the capacity of the Newfoundland Public Health Laboratory and to develop a health promotion strategy. The Department of Municipal and Provincial Affairs will dedicate a significant portion of municipal infrastructure funding to drinking water and water treatment projects over the next three years.

Government has made substantial progress in the implementation of the MBSAP for drinking water safety. This included the designation of nine new protected water supply areas, investment of over $121,000,000 on various water and sewer projects to date, expansion of chemical and bacteriological water quality monitoring to cover all public water supplies, improved reporting of drinking water quality data and boil water advisories, a reduction in the number of boil water advisories, resolution of trihalomethanes and other drinking water quality issues (pH, colour, turbidity, arsenic, fluoride and lead) in a number of communities, improvements in regulatory approval and inspection systems, and delivery of operator education and training.

The Drinking Water Safety Technical Working Group met on a regular basis during the year and accomplished, amongst other things, the revision of provincial standards for bacteriological quality of drinking water. It evaluated bacteriological sampling regimes, current boil water advisories and coordinated provincial budgetary submissions.

The report outlines the path forward to continue with the implementation of the MBSAP to help ensure the safety of our drinking water.

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1 INTRODUCTION

1.1 Overview

The availability of a reliable supply of clean and safe drinking water is one of the most important determinants of public health. Historically, our improved health status owes much to the improvement in our water supply systems. Yet, recently publicized outbreaks of waterborne disease and chemical quality concerns of drinking water have heightened our awareness of issues surrounding water quality.

Turning on the tap and feeling confident that the water coming out is clean and safe to drink is something Newfoundlanders and Labradorians should be able to take for granted. Generally, people in the province enjoy good drinking water quality. Nevertheless, people are increasingly asking the question, "Is my water safe to drink?". While tap water that meets the *"Guidelines for Canadian Drinking Water Quality"* (GCDWQ) is safe to drink, there continues to be an increasing number of threats to drinking water quality. These are due to a variety of natural and man-made causes and, as a result, there are some concerns about the safety of public drinking water.

The Government of Newfoundland and Labrador has made a commitment to provide clean and safe drinking water to the public by implementing a Multi-Barrier Strategic Action Plan (MBSAP) for drinking water safety. This plan simply refers to the protection of drinking water on a variety of levels. The components of the MBSAP include: source protection, water treatment, operation and maintenance of water supply systems, comprehensive drinking water quality monitoring and reporting, appropriate inspection, abatement and enforcement measures, and operator education and training. The primary goal is to ensure that adequate safeguards are in place at each stage of the water supply system to minimize the possibility of pathogens and other contaminants entering the water and, therefore, to ensuring the safety of drinking water. Additional goals of the action plan are to provide public access to drinking water quality data, ensure open and transparent communication with the public on all drinking water quality related issues, restore public confidence in drinking water, and ensure long term sustainability of water supply systems.

To implement the MBSAP for drinking water safety effectively, four government departments are working together. A Cabinet Committee of Ministers was appointed to deal with drinking water safety on a proactive basis. The committee is chaired by the Minister of Environment, and includes the Minister of Health and Community Services, the Minister of Municipal and Provincial Affairs, and the Minister of Government Services and Lands. The cabinet committee is supported by an inter-departmental Drinking Water Safety Technical Working Group (TWG).

Under the leadership of the cabinet committee, the departments have made substantial progress in implementing the MBSAP for drinking water safety. This is the first annual report on drinking water safety in Newfoundland and Labrador and it reports on the progress made in the 2001-02 fiscal year on various components of the MBSAP by the four key departments. This report was prepared in fulfilment of the Government of Newfoundland and Labrador's commitment to issue an annual progress report on drinking water safety in the Province.

1.2 Objectives

The main objective of this report is to provide an overview of the progress of activities on each component of the MBSAP for drinking water safety. The highlights of the various sections of the report are as follows:

Section 2 provides details of the challenges and issues facing the implementation of the action plan for drinking water safety.

Section 3 provides details of the progress and accomplishments of implementing the action plan during the past year.

Section 4 provides details of the Government's proposed activities or the path forward for the next fiscal year in order to provide clean, safe and secure drinking water.

2 CHALLENGES AND ISSUES

2.1 Diversity of Water Supply Systems

An adequate supply of good quality water is a basic necessity and must be available to meet the water needs of present and future generations. However, the delivery of clean and safe drinking water is a challenging task due to a number of site specific factors and constraints. Some of the major challenges and issues experienced by purveyors and regulators relating to drinking water safety are discussed in this chapter.

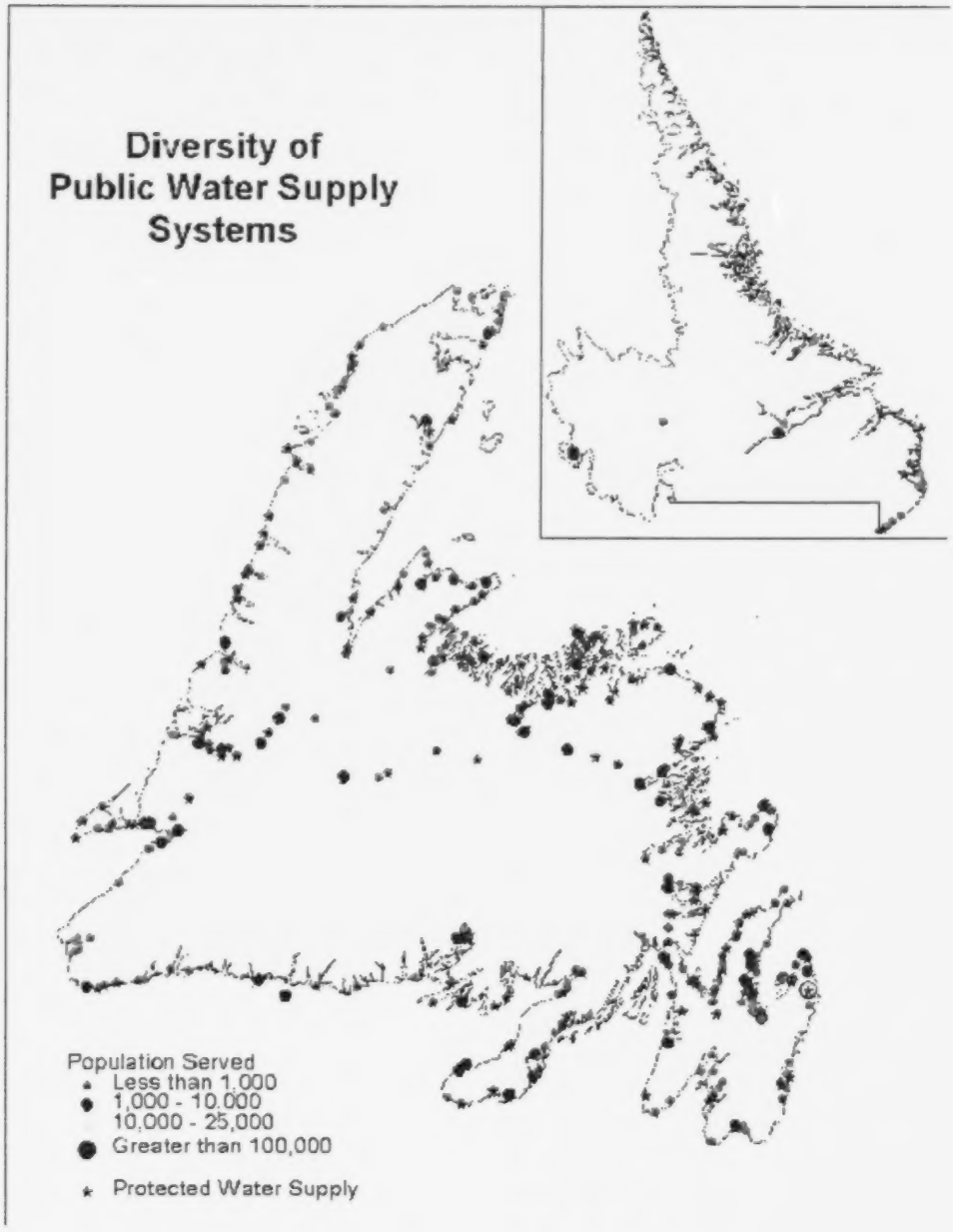
The population of Newfoundland and Labrador is estimated to be 512,930 people (Statistics Canada, 2001 Census of Canada). Approximately 90% of the population is concentrated along the coastline which is 17,540 kilometres long. There are 617 communities in the current inventory with 570 public drinking water sources and 600 public water supply systems. Many communities have more than one water supply system and 228 communities do no have a public water supply system. According to the water system classification developed by the Association of Boards of Certification, of the 600 water supply systems, there are 552 small systems, 44 medium systems, three large systems and one very large system. The majority of the small water supply systems service a population base in the range of 150 to 500 people. The distribution of different types of water supply systems is shown in **Figure 1**.

There are 319 public water supply systems based on surface water sources servicing the majority of the population in the province. This is due to the reliability of surface water supplies and easy access to a large number of lakes and ponds.

There are 251 public supply systems based on groundwater which is obtained from both dug and drilled wells. Dug wells are usually between 2 and 5 metres deep, depending on the depth at which bedrock is encountered. The depth of drilled wells ranges from about 15 to 150 metres. Groundwater wells are the water supply of choice for most smaller communities and for augmenting systems where distribution costs would otherwise preclude public water supply.

The large number of communities, and a relatively small population spread over a large geographical area, makes the administration of public water supply systems and the provision of safe drinking water a challenging task. Small communities are often constrained by technical and financial resources due to size, remote location and limited tax base. These small systems are often at higher risk of water contamination, and require substantial technical and financial support.

Figure 1: Public Water Supplies



2.2 Water Quality Indicators

2.2.1 Chemical Indicators

Based on the information and knowledge gained through regulatory inspections and the drinking water quality monitoring program, the main challenges and issues with respect to chemical indicators of drinking water quality identified in 2001-02 are:

- Aesthetic parameters - pH and colour
- Contaminants- arsenic, lead and turbidity
- Trihalomethanes (THMs)

Aesthetic Parameters

There are a number of aesthetic parameters such as pH, colour, iron and copper whose values are either above or below the recommended guidelines. Aesthetic parameters reflect substances or characteristics of drinking water that can affect its acceptance by consumers but which usually do not pose any health effects. Improvement of aesthetic parameters contributes to the overall quality and safety of drinking water.

pH - There are about 46 public water supplies where pH values are below the recommended guideline of 6.5. Although pH is an aesthetic parameter which does not have direct health implications, low pH levels accelerates the corrosion process of pipes and fittings and the leaching of metals. There are about 28 public water supply systems where pH values are above the recommended guideline of 8.5.

The adjustment and optimization of pH will enhance drinking water quality. It will also prolong the life of the distribution system by reducing corrosion. pH control reduces the dissolution of metals from the distribution system into the water, and thus reduces the concentrations of metals in drinking water. However, the pH should not be adjusted to above pH 7 since THMs formation is enhanced at higher pH and excessive pH adjustment could be counterproductive.

Colour - The other aesthetic parameter of concern is colour. There are about 200 public water supplies with colour values above the recommended guideline of 15 True Colour Units (TCU). Colour in drinking water may be due to the presence of coloured organic substances or metals such as iron, manganese and copper. The presence of colour is not directly linked to health but it can be aesthetically displeasing. This is also of concern since the presence of colour in untreated source water

is an indirect indicator of the THMs formation potential when the water is chlorinated.

Bogs and wetlands produce large amounts of dissolved organic materials such as tannins, lignins and humic acids, which can give water a tea-like colour. Calcium carbonate from regions with limestone bedrock may give water a greenish colour, while ferric hydroxide (iron) may impart a reddish colour. The degree of colouring will depend on the concentrations of these and other substances. Water colour is highly influenced by land cover in a basin. Bogs and wetlands drainage will contribute high levels of colour to surface runoff, while less organic soils or exposed bedrock in a basin will contribute little to colour. Treated drinking water should not have much apparent colour.

Others - Some other aesthetic parameters such as copper and iron were also reported above the recommended guidelines in some of the public water supply systems, which is typical of the natural setting of the province.

Contaminants

The main chemicals or parameters of concern in our public water supplies are: arsenic, lead, turbidity and THMs. **Table 1** provides information on the total number of communities affected by each of the main contaminants.

Table 1: Number of Communities with Contaminant Exceedances

Contaminants	Recommended Guideline	Number of Communities
Arsenic	0.025 mg/L	**6**
Lead	0.01 mg/L	**13**
Turbidity	1.0 NTU	**110**
	5.0 NTU (aesthetic objective)	
THMs	100 µg/L	**71**

Arsenic - Six communities that are on groundwater based water supply systems were identified as being affected by naturally occurring arsenic. The recommended guideline for arsenic is 0.025 mg/L. Arsenic is the 20th most common element in the earth's crust and is known to occur in water in some Canadian provinces. The current information and water quality data on arsenic in Newfoundland and Labrador is of a preliminary nature and the Department of Environment has started

to delineate the extent of arsenic levels so as to be able to propose appropriate mitigative solutions.

Lead - Lead is another chemical of concern. Lead is present in tap water as a result of dissolution from natural sources or more commonly, from distribution systems and plumbing containing lead in pipes, solder or service connections. The recommended guideline for lead in drinking water is 0.010 mg/L. Lead levels above the recommended guidelines were found in13 communities.

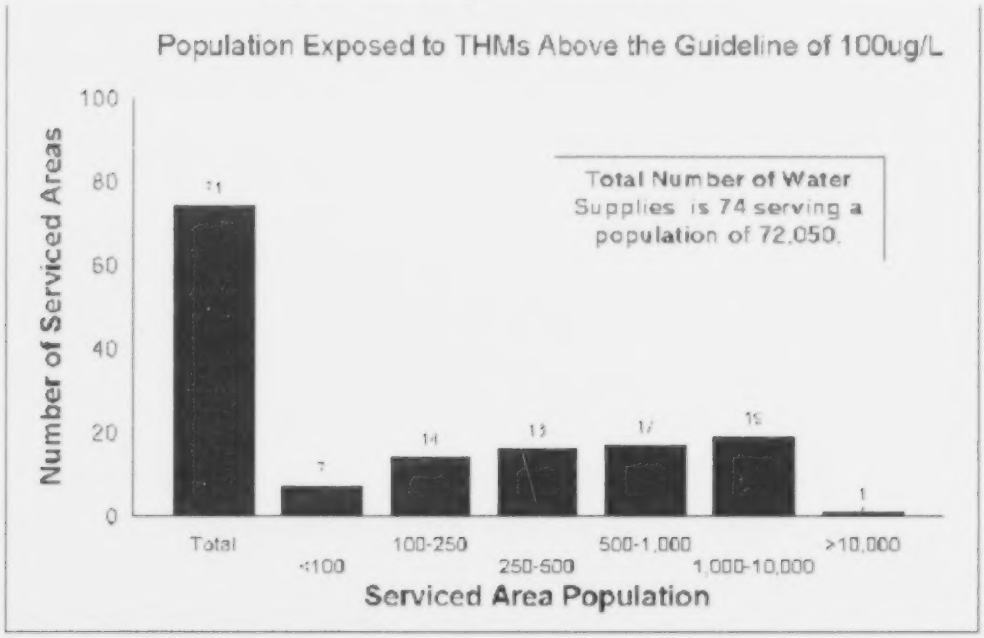
Most lead exceedances are attributed to improper flushing of pipes and are thus not always representative of the water quality in the distribution system. While sampling protocols have been revised to ensure that lead samples are properly flushed and are representative of the water quality in the distribution system, in a few cases, local plumbing problems or low water usage at some sites require flushing to be carried out for longer periods than is usually done. Such sites will be identified on an ongoing basis and flushing protocols for these sites will be modified to obtain representative samples from these locations.

Turbidity - The other parameter of concern is turbidity. The recommended aesthetic objective for turbidity is 5.0 Nephlometric Turbidity Units (NTU), and the Maximum Acceptable Concentration (MAC) in treated water is 1.0 NTU. High turbidity by itself is not considered a harmful condition, but its presence can reduce the effectiveness of disinfection.

Reducing turbidity in water supplies requires using good source control and treatment alternatives as appropriate. Groundwater wells usually do not exhibit turbidity, but if they do, it is a good indicator of surface water influence. The source and cause of the problem needs to be assessed and recommendations made to the communities on appropriate corrective measures on an individual basis.

THMs - THMs formation is a common problem in surface-based public water supplies with chlorination as the only method of water treatment. There are 74 water supplies, affecting 71 communities, where THMs levels are above the recommended guideline of 100 µg/L. As shown in **Figure 2**, the total population exposed to THM levels above the recommended guideline was 72,050.

Figure 2: Summary for Trihalomethanes



Although the department has been successful in reducing the THMs levels in some communities, there are now a higher number of communities with THMs levels above 100 µg/L. This is because with growing public awareness about the benefits of disinfection, more communities are now chlorinating their water. THMs exceedances are usually not found in groundwater supplies due to low concentrations of organic precursors.

The province's multi-component approach to THMs control was outlined in the report entitled "*Trihalomethane Levels in Public Water Supplies of Newfoundland and Labrador*", (Department of Environment, 2001).

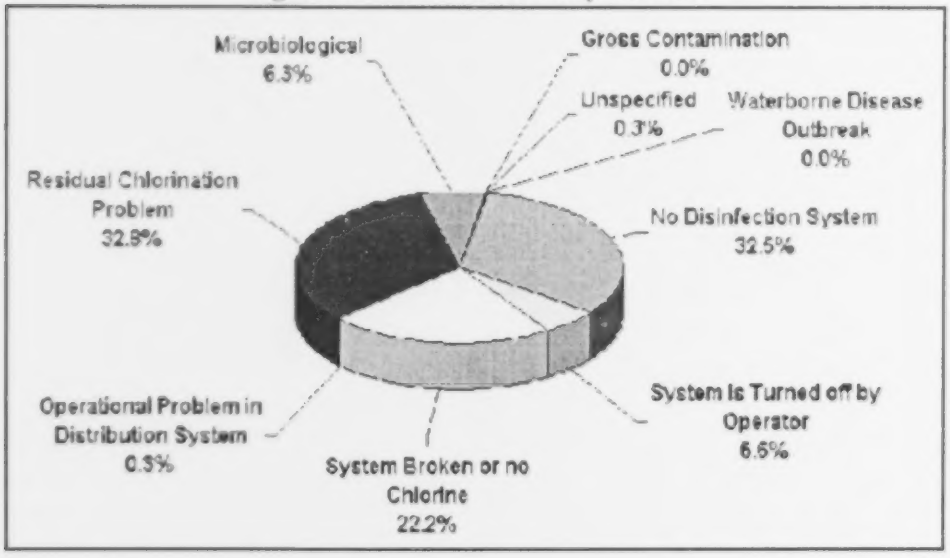
2.2.2 Bacteriological Indicators (Boil Water Advisories)

The MBSAP water identifies a series of measures to prevent possible contamination from reaching a consumer. Occasionally, due to the failure of perhaps one or more barriers, it becomes necessary to take an additional final step to ensure that there is no disease causing bacterial or microbiological contamination of drinking water. Disinfecting water by boiling is one way to protect public health, if the drinking water is of questionable microbiological quality.

There are many reasons why a boil water advisory may be issued. The most common reasons are that a public water supply has no chlorination or other disinfection system, or if there is one, it is not working properly. Water tests may indicate there is a problem with insufficient levels of residual disinfectant or the presence of the indicator bacteria, total coliforms, or *E. coli*. Lastly, a boil water advisory may be issued because it is known that contamination may have occurred following a major water main break, serious flooding, water treatment plant failure or because there is a waterborne disease outbreak due to waterborne agents such as *Giardiasis* in progress. These situations tend to occur rarely and corrective action can be taken quickly. There were no waterborne disease outbreaks in the province last year.

The number of boil water advisories currently in effect for public water supplies in Newfoundland and Labrador is 302. These boil water advisories affect 193 incorporated communities in the province, many of which have more than one public water supply. On a population basis, this issue affects approximately 66,500 people. **Figure 3** illustrates the various reasons for boil water advisories. It should be noted that the number of boil water advisories issued primarily due to failure of microbiological test results is relatively low at 6.3% and furthermore, poor test results are largely the result of failure to properly disinfect the water.

Figure 3: Boil Water Advisory Reasons



The number of currently affected communities is less than the 223 that were affected by the 322 boil water advisories that were in place when the *"Source to Tap"* report was written last year. These figures do not include water supplies that were placed on a boil water advisory during the course of the year and were subsequently removed as problems were corrected. A good example is the boil water advisory issued in St. John's in August 2001. Additionally, these figures do not include any boil water advisories that were recommended for private water supply systems such as those owned by individuals, groups of individuals, commercial facilities or institutions.

The challenge for Government, municipalities and individuals is to correct the deficiencies that necessitate boil water advisories. From the preceding facts and figures it is evident that the provision of adequate primary disinfection and the proper operation of existing chlorinators is the key to ensuring safe drinking water. Once all public water supply systems become equipped with disinfection systems, and are operated by trained individuals, the number of boil water advisories will be significantly reduced.

2.3 Water Supply Infrastructure

The settlement pattern and structure of local government in Newfoundland and Labrador presents challenges to the development of water supply and distribution systems. The province's population is widely dispersed, primarily along the coastline. This dispersion of population has implications for the number of individual water supply and distribution systems that are required, and in turn, it affects the effective and efficient provision of infrastructure.

With the expansion of local governments in the post-confederation era, the province began to work with municipal councils to develop water and sewer systems. Given the level of need and demands for funding, most municipal water and sewer systems in the province have been developed in an incremental manner, with expansions and improvements occurring as provincial or federal government funds became available, and municipal governments were able to share costs. The most practical approach to water and sewer development was to service those areas of municipalities which had the highest densities of housing. This ensured that the available funding served the greatest need in the shortest possible time. This approach, however, meant that the most expensive servicing needs were left until last to be completed.

Coincident with the proliferation of local governments, significant investment has been made in municipal infrastructure, with the majority of these expenditures being directed towards water and

sewer systems. As a result, in excess of 70% of households in the province now have public water and/or sewer connections.

Although significant progress has been made to date, municipalities and the province still face challenges in providing adequate water to residents. The number and types of water systems in use continue to pose challenges to expanding and improving water supply and distribution systems. Government will continue to invest in water and sewer infrastructure.

The replacement of aging infrastructure is an emerging issue both in this province and throughout the country. This is due to the fact that many water systems which were commissioned in the early 1950's have already served their design lifespan. Replacement of aging infrastructure is needed to ensure the integrity of distribution systems and the safety of drinking water.

It has been estimated that, utilizing traditional technologies and standards, it would cost $1.55 billion to provide piped water and sewer to all remaining unserviced households. It has also been estimated that it would take a further $1.56 billion to provide treatment facilities for public water supplies and sewage disposal systems. However, given the wide dispersion of population and the cost implications of providing all households with piped water and sewer systems, this would not appear to be a realistic goal in the short to medium term. Likewise, many of the province's water supplies provide good quality drinking water, without the need for extensive treatment. Chlorination is an accepted method of treating water and provides cost effective protection from bacteriological contamination.

2.4 Water System Operation and Maintenance

Chlorination is the most widely used method of water treatment throughout the province. Though it is primarily aimed at destroying and rendering harmless disease-causing microorganisms, it also protects the distribution system from microbial growth. In addition to chlorination, there are 13 operational water treatment plants in the province providing additional treatment processes.

One of the common challenges in this area is proper operation and maintenance of water supply systems. This challenge poses special problems to smaller communities. They often find it difficult to employ and retain qualified and trained operators. In a number of cases, the total cost incurred on annual operation and maintenance of water supply systems is also an issue due to the limited tax base of smaller communities. In the past, operators generally received only limited training, sometimes only

enough to operate newly installed equipment and components and was typically provided by the contractor upon completion of the works. Formal training was very limited and accreditation was voluntary.

3 PROGRESS AND ACCOMPLISHMENTS

3.1 Source Protection

This province has one of the most well established source protection programs in the country. Approximately 70% of the total population of Newfoundland and Labrador receive drinking water from protected surface and groundwater supplies. The 262 protected water supplies are indicated in **Figure 1** on page 4. Even though the source protection program is very successful, the Department of Environment is continuing its efforts to designate remaining unprotected areas as protected areas on a need and feasibility basis. Throughout the past year, about 70 communities with unprotected water supply areas were contacted about designation of their surface water supply as a protected area. In response, nine communities requested water supply area protection. In most cases, the requests were related to the expansion of existing protected areas. In addition, one groundwater supply was designated as a protected area over the past year. Though there are still unprotected public water supply areas across the province, it should be noted that most major water supply areas have been designated as protected areas.

Presently, there are seven active Watershed Monitoring Committees in the province dealing with land management issues in the most sensitive water supply areas. Additional Watershed Monitoring Committees will continue to be appointed, as the need arises.

In addition to source protection, the Department of Environment has been working on a number of activities such as a water supply area atlas, digitization of water supply area boundaries, land use inventory, identification of high risk areas, development of watershed management plans, application of Geographical Information System (GIS) for land use analysis, and development of best management practices, in order to ensure the safety of drinking water sources.

3.2 Water Supply Systems

As discussed in Section 2, aging infrastructure of water supply systems and subsequent need for replacement/repair is one of the greatest challenges faced while implementing the multi-barrier action plan for drinking water safety. Recognizing that water system infrastructure is an essential component of the action plan, the Department of Municipal and Provincial Affairs in 2001-02 spent about $47,700,000 under various water and sewer related infrastructure programs.

Over the past five years, the federal, provincial and municipal levels of government combined have invested over $250 million in the development, expansion and upgrading of water and sewer infrastructure. It is estimated that over 85% of the population is provided with public water services and over 65% with public sewer services.

Disinfection of drinking water is recognized as an essential component of the MBSAP and thus, has been given priority throughout the past year. Under the Disinfection Assistance Program, administered by the Department of Municipal and Provincial Affairs, 245 municipalities received funds in the amount of $13.4 million. As a part of this program, about 162 municipalities were provided with chlorine measurement kits at a total cost of $78,000.

Water treatment facilities are gradually growing in number across the province. The decision to implement a conventional or package water treatment facility is made based on a review of the available water quality data and the extent and nature of water quality problems. With government assistance, a new filtration system was added to the Town of Gillams water supply system, in order to address turbidity related concerns. A number of other towns such as Pasadena, Burgeo, Clarenville (Shoal Harbour water supply), St. John's (Windsor Lake water supply) and Corner Brook are pursuing the water treatment plant option. Three of these towns (Burgeo, Pasadena and Clarenville) have already initiated work on the water treatment facility.

3.3 Water Quality Monitoring and Reporting

Monitoring water quality at the source, within a treatment plant, and in the distribution system, continues to be an important requirement to assess the effectiveness of the MBSAP for drinking water safety.

Routine monitoring of drinking water quality in this province is a joint responsibility of the Department of Environment and the Department of Government Services and Lands. The Department of Environment is responsible for chemical and physical monitoring of source and tap water quality while the Department of Government Services and Lands through its network of 14 offices, is responsible for monitoring of bacteriological tap water quality and chlorine residuals. Larger municipalities such as St. John's and Corner Brook also collect bacteriological samples which are submitted to the province for analysis.

Newfoundland and Labrador continues to be one of two provinces in Canada which has

assumed the responsibility for drinking water quality monitoring of public water supplies and reporting of data to the public. In the eight remaining provinces, this responsibility has been assigned to the municipal governments. By conducting the drinking water quality monitoring with provincial staff, this province is able to adopt a highly proactive approach towards the safety of drinking water. Emerging issues of concern are identified faster and responded to more efficiently than would have been possible had this responsibility been assigned to the municipal governments. The central coordination of sampling also allows the departments to continuously modify and improve the sampling and analysis program in a very cost effective manner overall and to respond to any emerging issues.

As per the commitments made in the *Source to Tap* report, the province has established a system whereby all public water supplies are sampled. The public water supplies are sampled at the source and at the tap to ensure the safety of drinking water from source to tap.

3.3.1 Chemical and Physical Water Quality Monitoring

Samples for physical and chemical analysis are taken from the source water (lake, pond, river, reservoir, well or spring) and from the distribution system. The distribution system samples, classified as tap water samples, are taken at a site significantly beyond the point at which treated water enters the distribution system. The delivery of the chemical drinking water quality monitoring program is carried out by five Watershed Management Specialists, one Groundwater Management Specialist and three Regional Water Quality Officers, along with their other duties and responsibilities.

Samples are collected semi-annually with the exception of THMs and haloacetic acids (HAAs) samples which are collected on a quarterly basis. If there are any known or emerging site specific water quality issues, sampling frequency for inorganic parameters is also changed from semi-annually to seasonal. The main emphasis of the sampling is on tap water quality. However, source water quality is also monitored on a selective basis in order to assess the impact of land use activities, effectiveness of buffer zones and other environmental controls, THMs pre-cursor levels, and comparison between source and tap water quality.

In the period of April 1, 2001 to March 31, 2002, a total of 3,490 source and tap water samples were collected for various types of chemical analysis. An overview of the sampling activities for the past fiscal year can be seen in **Table 2**.

Table 2: Overview of Sampling Activity from April 1st, 2001 - March 31st, 2002

Parameter	Number of Source Samples			Number of Tap Samples		
	Total	Surface	Ground	Total	Surface	Ground
Inorganic Chemical Parameters	577	329	248	1267	882	385
THMs	N/A: THMs are a result of chlorination, thus not found in source samples			1584	1463	121
HAAs	N/A: HAAs are a result of chlorination, thus not found in source samples			52	52	0
Organic Chemical Parameters	No source samples taken			10	8	2

The monitoring program is limited to public water supplies only and currently there is no legislative requirement for the monitoring of institutional, commercial and private supplies.

To help ensure that consumers of water provided by a public drinking water supply have clean and safe drinking water, the province has adopted the chemical and physical guidelines in the *Guidelines for Canadian Drinking Water Quality 6th Edition, 1996*, as revised, as provincial objectives. The provincial "Standards for Chemical and Physical Monitoring of Drinking Water" can be accessed at :
www.gov.nf.ca/env/Env/waterres/Policies/WQ-Standard-PhysicalChemical.asp

Presently, the GCDWQ do not recommend a limit for HAAs. However, the province is testing for HAAs in tap samples from surface water supplies (since HAAs are not of concern with groundwater supply sources) to establish baseline data to be used as part of a national study for the development of HAAs guidelines.

3.3.2 Bacteriological Water Quality Monitoring

The provincial "Standards for Bacteriological Quality of Drinking Water" can be accessed at:
www.gov.nf.ca/env/Env/waterres/Policies/WQ-Standards-Microbiological.asp

The bacteriological water quality monitoring program is carried out by twenty-eight certified public health inspectors working in the Avalon, Eastern, Central, Western and Labrador regions from 14 Government Service Centre locations. Five positions were added during the 2001-2002 fiscal year. The test methodologies currently in use for the detection of total coliforms and *E. coli* are the Colilert and ColiBlue test methods. The Colilert method is a qualitative, presence-absence, test method while the ColiBlue test method is a quantitative test method. Both methods simultaneously test for the presence of total coliforms and *E. coli* in a 100 millilitre water sample. The results of these tests are compared to the current standards for bacteriological safety of drinking water and action is taken accordingly.

The results of tests conducted on the samples collected are shown in **Table 3**. 10.8% of samples collected were found to be unsatisfactory in terms of total coliforms and 2% were unsatisfactory in terms of *E. coli*. In addition to the samples collected by GSC directly, several municipalities collect their own samples and submit them to the Public Health Laboratory in St. John's for analysis. The number of such samples submitted in 2001-02 was 8,867 and of these 11.9% were unsatisfactory for total coliforms and 1.9% were unsatisfactory for *E. coli*. The presence of total coliforms in concentrations greater than the guidelines indicates that the treatment is inadequate or that the distribution system is experiencing regrowth or infiltration. They are not necessarily an indication of the presence of fecal contamination. The presence of *E. coli* is a definite indicator of the presence of fecal contamination and must be dealt with as soon as reported.

Sampling for bacteriological and chlorine residuals continued at an accelerated pace since March 31, 2002. The total number of public water supply samples collected was 994 in April 2002 and 1,114 in May 2002.

Table 3: Bacteriological Test Results from Public Water Supplies - Fiscal Year 2001-02

		GSC Region					Total
		Labrador	West	Central	East	Avalon	
Total Coliform	Satisfactory	886	1,968	2,891	1,943	1,875	**9,563 (89.2%)**
	Unsatisfactory	105	272	486	94	200	**1157 (10.8%)**
	Total	991	2,240	3,377	2,037	2,075	**10,720**
E. coli	Satisfactory	847	1,845	2,514	2,005	2,000	**9,211 (98%)**
	Unsatisfactory	17	35	31	32	75	**190 (2%)**
	Total	864	1,880	2,545	2,037	2,075	**9,401**

The Public Health Laboratory and regional testing sites (hospital labs) also process bacteriological water samples submitted by individuals to test private wells. Bacteriological results are reported to the communities or the persons submitting the sample according to the standard protocol for bacteriological water quality monitoring and reporting.

3.3.3 Data Management and Reporting

In the last fiscal year, the data management and reporting system of the Department of Environment has been completely revised and enhanced. All chemical analysis results for samples taken under the chemical monitoring program across the province are stored in one provincial database in the department including: surface water sources, groundwater wells and tap water (organic, inorganic, THMs, HAAs). The new database design allows faster and more accurate reporting of drinking water quality data.

An early exceedance reporting system has been implemented. This system allows the department to inform a community of any problems in samples collected from the community as soon as it is detected at the analytical laboratory. When the chemical analysis lab detects that a contaminant in a sample is above the guideline for a particular contaminant, it will immediately inform the department. The department will in turn, immediately inform the community, Medical Officer of Health (MOH), Department of Health and Community Services, and the Department of Municipal and Provincial Affairs. As per the protocol laid out in the GCDWQ, another sample will then be collected and sent to the lab to verify the results of the first sample. This allows decision making to occur with the best information available in a timely manner.

A drinking water quality manual has been developed and checklists for: sampling and communication; data quality assurance and quality control (QA/QC); data processing; and exceedance reporting have been incorporated to ensure that protocols are strictly adhered to from the moment a sample is collected until the data is posted on the web page.

Throughout the past year there has been significant revisions and improvements to the data dissemination process. An interpretive annual water quality report for each community sampled was designed and used for the first time this year.

To provide the public with greater access to drinking water quality data, the database was revised and enhanced to allow reporting of more water quality information on the web. The web page

posts the following information:

- historical drinking water quality data
- drinking water quality data for the past two sampling seasons
- proposed sampling to be conducted in fiscal year 2002-2003
- boil water advisory information
- operator training and education schedule
- reports and publications

The web page can be visited at the following link: www.gov.nf.ca/Env/water

A strategic plan on drinking water quality data management and communication is being developed. The objective is to improve the collection, management and communication of drinking water quality data in order to provide the public with timely and user friendly access to accurate drinking water quality data.

In order to facilitate the sharing of water supply and water quality information among government departments, the Municipal Information Management System (MIMS) was created. MIMS is a database, managed by the Department of Municipal and Provincial Affairs, which consists of several modules including basic information on all municipalities, waste management, capital works, financial details, municipal profiles and water supply information. This database provides essential information such as the area(s) serviced, the type of water supply, types of treatment, watershed or wellhead protection, boil water advisory status, bacteriological testing results, chemical testing results, and details on persons responsible for the system as well as their location. MIMS will be enhanced in several areas in the coming year. As of April 1, 2002 Environmental Health Officers have begun to use MIMS for entry of all bacteriological test results.

3.4 Regulatory Tools and Mitigation

3.4.1 Approvals

The issuance of regulatory approvals is an integral component of the MBSAP for drinking water safety. All public water supply and sewer systems in the province are regulated under the *Water Resources Act*. A total of 157 Certificates of Approval were issued throughout the past year dealing with various components of water supply and sewer systems.

In addition to the above regulatory approvals, the Department of Environment also issued 108 Certificates of Approvals under Sections 10 and 11 of the repealed *Environment Act*. This regulatory approval process deals with development activities within public water supply areas and is designed to ensure the integrity of drinking water sources.

The *Water Resources Act* provides for the licensing of water well drillers in the province by setting minimum standards of training and experience in the construction of drilled wells. All non domestic wells also require a permit from the Department of Environment before construction begins. A database of domestic well records is maintained by the Department of Environment with up to 50 items of information concerning a well including assessment of each well's water quality. There are about 15,000 records in the database with about 500 new wells being added each year. This information has been put on compact disk and is referred to frequently by consultants, municipalities, other government departments, pump installers, water bottlers, well drillers, and realtors.

3.4.2 Inspections

The Department of Environment requires that all public waterworks be maintained and operated in a manner that provides safe and clean drinking water for the benefit of present and future generations of Newfoundlanders and Labradorians. This is enforced through routine regulatory inspections of public water supplies. During the past fiscal year a total of 112 inspections were carried out pertaining to water and sewer related activities. Public groundwater wells and other selected wells were also inspected on a regular basis in order to ensure that these wells were constructed as per requirements of the *Water Resources Act*. Finally, approximately 26 inspections were carried out on protected public water supplies to respond to public concerns in reference to development activities, as well to update land use inventory and identify the need for the preparation of watershed management plans.

3.4.3 Mitigation

The problems identified as a part of the drinking water quality monitoring and regulatory inspections are dealt with using a number of conventional and non-conventional mitigation strategies.

The Department of Environment has been successful in reducing THMs levels in a number of communities. In 2001-02 THMs problems have been resolved in three communities utilizing mitigation methods such as chlorine demand management, alternative disinfection, or alternative water supply source. In addition, recommendations and proposed mitigative solutions have been presented to

approximately 11 additional communities.

Contaminants with concentrations above the recommended guideline, such as arsenic, lead and turbidity need to be assessed on a case by case basis to determine the source and the extent of contamination. Once the source and extent has been determined, appropriate mitigative solutions are adopted.

3.5 Operator Education and Training

The availability of qualified and trained operating personnel for water systems is vitally important for safe and sustainable operation of water supply systems. It has been estimated that water and wastewater utilities in North America spend between 1 and 3% of their total annual operation and maintenance budget on operator education and training. This expenditure is considered to be essential in order to safeguard the capital infrastructure and to maximize the return on this investment. The amount spent in this province is considerably less but the Department of Environment is committed to deliver the operator education and training program as outlined in the 2001 strategic plan.

A primary focus of the department during 2001-02 was Phase 1 of the Operator Education and Training Program. It consisted of classroom education and training for water system operators and was divided into three sessions;

- disinfection of drinking water,
- water supply system operation and maintenance - 1, and
- water supply system operation and maintenance - 2.

These three seminars were offered in 18 locations covering each geographic region of the province. The total number of participants in the seminar series was 855. Participants included water system operators, elected municipal officials, municipal administrators, and representatives of the Combined Councils of Labrador. This high participation rate is considered a good indication of interest in the program.

The Department of Environment also hosted its second annual "Clean and Safe Drinking Water Workshop". The workshop was held in Gander from March 12th to 14th, 2002. The title of the workshop was "Clean and Safe Drinking Water - Water Treatment Alternatives". Participation was excellent with 305 registrants. The Department of Municipal and Provincial Affairs provided financial assistance to communities wishing to attend the workshop. This assistance was in the form of a

maximum $300 grant per community to assist with travel costs. The workshop also included a trade show of suppliers and consultants demonstrating their products and educating people on product functions and operation.

The Atlantic Canada Water Works Association (ACWWA) also offered six small system courses during 2001-02. These courses were offered in St. John's, Gander and Deer Lake. A total of 156 people participated in these courses. The Department of Municipal and Provincial Affairs provided financial assistance to municipalities to cover the registration and associated travel costs. The topics covered during these seminars were hypochlorination and disinfection.

Interest in operator certification has risen dramatically. Numerous municipal operators are receiving certification as water system operators through the Atlantic Canada Water and Wastewater Voluntary Certification Board (ACWWVCB). This growing number of educated and, in some cases, certified water system operators is essential for the implementation of the multi-barrier action plan for drinking water safety.

3.6 Inter-Departmental Cooperation

As stated in Section 1, the Drinking Water Safety Technical Working Group (TWG) consists of representatives from the four key government departments responsible for providing clean and safe drinking water through the implementation of the multi-barrier action plan. The TWG is represented by the following line departments:

- Environment (ENV)
- Government Services and Lands (GSL)
- Health and Community Services (HCS)
- Municipal and Provincial Affairs (MPA)

The TWG has met as frequently as every 2-3 weeks and reports activities regularly to the steering committee and to senior government officials. This working group ensures that the participating departments are always apprised of current events pertaining to drinking water. It allows appropriate efforts to be directed at emerging issues with the best available resources without duplication. With this working group, there is an effective networking mechanism in place.

Some of the major accomplishments of the TWG in 2001-02 include:

- Input and review of *Source to Tap* report and preparation of a public information brochure which was distributed province-wide in September 2001.
- Revision of Standards for Bacteriological Quality of Drinking Water and application of those standards.
- Coordination of provincial budgetary submissions for the next year for initiatives under the Safe Drinking Water program.
- Responses to recent findings of exceedances of contaminants.
- Evaluation of bacteriological sampling regimes and evaluation of current boil water advisories.
- Verification of water supply information as reported to the Municipal Information Management System (MIMS) database.

This co-ordinated approach by government has ensured substantial progress in implementing the multi-barrier action plan for drinking water safety.

3.7 Resources and Benefits

During the 2001-02 fiscal year, government allocated an additional $1 million to ensure safe drinking water throughout Newfoundland and Labrador. This allocation was in addition to $10 million of the multi-year Department of Municipal and Provincial Affairs Municipal Capital Works program which is designed to help municipalities install or upgrade water disinfection systems.

The Department of Environment spent $251,000 to hire two Watershed Management Specialists including the cost for travel, supplies and water testing instruments and an additional $40,000 under the Federal-Provincial Water Quality Agreement to hire one Regional Water Quality Officer, in order to expand chemical drinking water quality monitoring. The Department of Municipal and Provincial Affairs has committed $13.6 million of its capital and infrastructure funding to install or repair water disinfection systems. In addition to this, the department also hired three Community Water and Wastewater Specialists for the inspection and repair of disinfection systems and to develop a database which will assist the four departments in their efforts to share information on municipal water supplies. The Department of Government Services and Lands spent $250,000 to hire five Environmental Health Inspectors to expand bacteriological water quality monitoring. The Department of Health and Community Services spent $392,000 to improve and expand bacteriological water testing operations throughout the province. The above funds were spent to implement various components of the multi-barrier action plan for drinking water safety.

These additional resources have made substantial improvements in the management of public water supplies in Newfoundland and Labrador. In 1989, this province had no chemical drinking water quality monitoring. In 2001, this province has a multi-barrier action plan and the co-ordination of four government departments along with drinking water quality monitoring and reporting for all public water supplies.

4 PATH FORWARD

4.1 Government's Commitment to Clean, Safe and Secure Drinking Water

As indicated in the throne speech of March 13, 2001, drinking water safety is a priority area for the Department of Environment. The Department of Environment, along with the Departments of Health and Community Services, Municipal and Provincial Affairs and Government Services and Lands is committed to implement the strategic action plan for drinking water safety and to ensure public confidence in our water supplies.

4.2 Government Action Plans - 2002-2003

4.2.1 Department of Environment

In 2002-03 the Department of Environment will spend $530,000 to implement phase two of its community based operator training program and to support the drinking water quality monitoring program.

Source protection is one of the key elements of the multi-barrier action plan and the first step to ensure drinking water safety. In order to strengthen its source protection program, the Department of Environment has received funding for a project to convert to GIS format the boundaries of all public water supplies in the province. A digital GIS map layer will be developed showing approximately 400 protected, unprotected and potential water supply areas. This GIS map layer can then be shared throughout government, industry and the private sector. It will complement the land use inventory, watershed management and wellhead protection activities.

The Department of Environment will be implementing a major change in its regulatory process for water and sewage works. The objective is to distinguish between construction and operational phases of water and sewer projects, and to strengthen the regulatory inspection of water supply systems to enhance drinking water safety.

A new application/inspection tracking system is also under development to streamline the tracking of applications and approvals issued under various Sections of the *Water Resources Act*. The system will be web based and accessible by regional staff. The goal of the system is to decrease the

time spent tracking information and preparing approvals to allow more time for field work.

Government realizes qualified and trained operating personnel for water systems are vitally important to the safe and sustainable operation of water supply systems. This year, the second phase of the community water systems training program will deal with on-site training in which the department will work directly with the operators on the systems in their community. This is a unique approach to operator training.

The Department of Environment will develop mobile training units and will complement Phase 1 (classroom training) with Phase 2 (on-site training) as soon the mobile training units are ready. On-site training topics will also be based on the curriculum developed for operator education and training. The training schedule will be available on the department's web page. In addition, the department will continue to encourage and facilitate operator certification as and when appropriate.

Government has dedicated additional resources in the form of three technician positions, which will be used to deliver the on-site training program and to fulfill the regulatory inspection requirements. Water system audits of public drinking water systems will be carried out to assess the implementation of recognized best management practices in these systems. Through regulatory inspections, the department will continue its efforts to verify and update the accuracy of reported information on water supply systems.

The drinking water workshop will be held on an annual basis. The topic for the 2003 workshop is "Clean and Safe Drinking Water Workshop - Water Quality in the Distribution System". The department will continue to improve public access to drinking water quality data.

Over 3,000 samples will be collected for chemical water quality analysis. In addition, samples will also be collected for QA/QC analysis and repeat sampling will be carried out on site specific exceedances. The entire cost of the chemical analysis will be borne by the Department of Environment.

The Department of Environment will continue to maintain boil water advisory information on its web page, based on the information provided by the Government Service Centres.

Based on the drinking water quality monitoring and regulatory inspections, site specific contamination issues will continue to be identified and mitigation plans will be developed to address these issues. As has been experienced to date, it is expected that priority concerns will be:

- Aesthetic parameters - pH and colour

- Contaminants - turbidity, arsenic and lead
- THMs
- Bacteriological Parameters

The department will conduct additional sampling to do a speciation study of arsenic found in the province's drinking water supplies. This study is needed as arsenic is commonly found in two different forms in water - arsenate and arsenite. Both forms have different treatment methodologies. The information on what proportion of the total arsenic in the samples is present as arsenate and what proportion as arsenite will allow the department to make appropriate recommendation on mitigation of arsenic in public drinking water supplies.

The Department of Environment, in conjunction with the Department of Mines and Energy, has begun discussions into ways of determining the extent of background arsenic in groundwater in the province. This information will be particularly useful for those using or contemplating construction of a new well. The objective is to produce arsenic risk mapping by comparing the geology and well sampling results of certain areas of the province.

4.2.2 Department of Municipal and Provincial Affairs

The department will provide $177 million of municipal infrastructure funding to drinking water and water treatment projects over the next three years. In addition, the department will continue the multi-year water disinfection program announced last year. This program provides municipalities currently under boil water advisories access to 100 percent funding up to a maximum of $100,000 to install water disinfection equipment.

A number of towns such as Pasadena, Burgeo, Clarenville (Shoal Harbour water supply), St. John's (Windsor Lake water supply) and Corner Brook are pursuing water treatment plant options. Three of these towns (Burgeo, Pasadena and Clarenville) have already initiated work on the water treatment facility. The department will provide appropriate financial support towards the completion of these projects.

The department is encouraging regionalization of water supply systems where smaller communities in the region will be serviced by bigger communities. Under this plan, the Towns of Botwood, Peterview and Northern Arm are planning to connect to the Exploits regional water supply system. The department will provide an appropriate level of funding for such projects. The department is offering incentives to regionalize operation and maintenance services or personnel.

In 2001-02 the Municipal Information Management System (MIMS) database for water supplies underwent extensive QA/QC checks. MIMS will be enhanced in several areas in the coming year.

The department will provide financial assistance to communities wishing to attend the training, workshop and certification courses relating to drinking water safety.

4.2.3 Department of Health and Community Services

The Department of Health and Community Services has allocated nearly $500,000 in 2002-2003 for three initiatives. These funds will be used to increase the capacity of the Newfoundland Public Health Laboratory to carry out bacteriological water quality testing, to hire an environmental health specialist to lead a health promotion strategy related to drinking water quality issues, and to provide funding to the Health Labrador Corporation and Grenfell Regional Health Services to hire a shared environmental health coordinator to work with the medical officers of health for the two integrated health boards.

4.2.4 Department of Government Services and Lands

The department will spend $458,000 to hire seven new environmental health officers (EHOs). These officers deployed throughout the province, will be involved in the department's bacteriological sampling of public water systems and will increase current inspections by approximately 25 per cent and bring the current number of EHOs to 36 in total.

4.3 Working Together

The Drinking Water Safety Technical Working Group, comprised of representatives from the four government departments responsible for drinking water safety, will continue to work under the guidance of the cabinet committee. An early specific objective of the group is to oversee implementation of the revised bacteriological standards, and to recommend better means to report bacteriological results through the use of MIMS. The government departments, in consultation with municipalities, will address deficiencies which trigger boil water advisories and therefore, reduce the total number of boil water advisories.

5 CONCLUSIONS

Government is committed to ensure drinking water safety and restore public confidence in public water supply systems. In May 2001, government approved the implementation of a strategic action plan for drinking water safety. This plan is based on the multi-barrier framework and is being implemented jointly by four government departments under the direction of the cabinet committee supported by a technical working group.

This is the first annual report on the progress of the strategic action plan. As mentioned in this report, substantial progress has been made on all elements of the multi-barrier action plan in order to provide clean, safe and secure drinking water to the people of this province. This includes the designation of nine new protected water supply areas, investment of over $121 million on various water and sewer projects to date, expansion of chemical and bacteriological water quality monitoring to cover all public water supplies, improved reporting of drinking water quality data and boil water advisories, reduction in number of boil water advisories, resolution of trihalomethanes and other drinking water quality issues (pH, colour, turbidity, arsenic, fluoride and lead) in a number of communities, improvements in regulatory approval and inspection systems, and delivery of operator education and training.

This report identifies the challenges and issues and outlines a path forward to deal with them. Government, in cooperation with municipalities, will continue to respond to these challenges and it is anticipated that the already substantial improvements in relation to these issues will be augmented through the next year.

WATER QUALITY
WATER CONFIDENCE

Drinking Water Safety

GOVERNMENT OF
NEWFOUNDLAND AND LABRADOR
Department of Environment

When we turn on our taps, we want to feel confident that the water coming out is clean and safe to drink. Generally, Newfoundlanders and Labradorians enjoy good drinking water quality. Our province's source water is among the safest in the country, and Government's multi-barrier approach to drinking water safety is designed to keep it that way until it reaches our taps. Since 1991, across the country, people have become increasingly aware of and interested in water quality issues. That is why Government has committed to keeping residents of the province updated on drinking water safety.

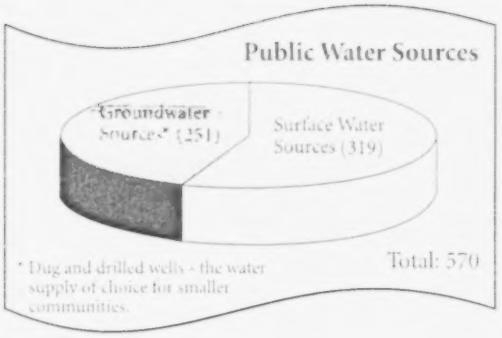
WHERE DOES OUR WATER COME FROM?

TYPES OF WATER SUPPLIES

Public	Cities, Towns and Local Service Districts.
Institutional	Supplies serving public schools, hospitals, parks, firehalls that provide water to the public, Newfoundland and Labrador Housing group housing and other facilities that are *not* on a public supply as defined above.
Commercial	Supplies serving private schools, daycare centres, hotels, motels, restaurants and other facilities that are *not* on a public supply as defined above.
Private	Supplies serving individual homes or clusters of homes and businesses *not* catering to the public (whether leased or rented, including from Newfoundland and Labrador Housing).
No Owner	Roadside springs, lakes, rivers and ponds.

About 83 per cent of Newfoundlanders and Labradorians are served by a public water system. The remaining 17 per cent rely on their own private well. 600 public supply systems of varying sizes deliver water from 570 public drinking water sources.

For information on safety of public water supplies, visit www.gov.nf.ca/env or contact your nearest Government Service Centre or Department of Environment office. The numbers are listed on the back panel of this brochure.


Public Water Sources
Groundwater Sources* (251)
Surface Water Sources (319)
Total: 570
* Dug and drilled wells - the water supply of choice for smaller communities.

SAFEGUARDING OUR DRINKING WATER

Because water is part of our natural ecosystem, it will contain many different kinds of substances. Using the appropriate guidelines or standards, Government routinely monitors our public water supplies for bacteria and substances which may affect the safety or cleanliness of public drinking water.

Public health inspectors working for the Department of Government Services and Lands monitor the bacteriological quality of drinking water and the amount of chlorination. Watershed management specialists and water quality officers working for the Department of Environment monitor the chemical and physical quality of drinking water, both at the source and at the tap. The Department of Municipal and Provincial Affairs provides financial support to municipalities enhancing chlorination systems.

Chlorine and Public Health

Chlorination plays a critical role in protecting drinking water supplies from waterborne infectious diseases. The filtration and disinfection of drinking water has been responsible for a large part of the 50 per cent increase in life expectancy in the developed world, in this century. Filtration of drinking water and use of chlorine has been called "probably the most significant public health advance of the millennium."

To minimize the possibility of people drinking water containing harmful bacteria, chlorine is usually used to disinfect our public water systems. If tests detect certain kinds of bacteria, or if chlorination is in some way inadequate, a "boil water advisory" is issued for that community. When unacceptable concentrations of chemicals are found, the Department of Environment works directly with the community and health officials to address the problem.

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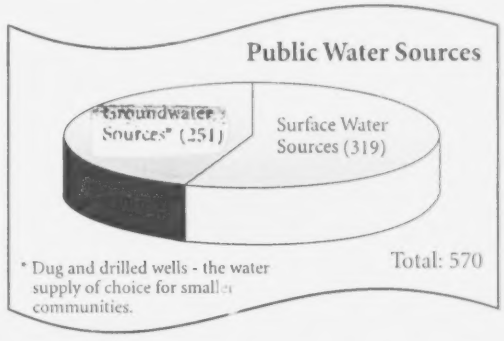
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OUR COMMITMENT

Government has a long-standing commitment to providing a reliable supply of clean and safe drinking water for all Newfoundlanders and Labradorians. The **Multi-barrier Strategic Action Plan (MBSAP)** ensures appropriate safeguards are in place at each stage of water supply systems, to minimize the possibility of people drinking water containing substances or pathogens that may pose health concerns. This multi-barrier approach radically reduces the possibility of failures that contributed to the Walkerton tragedy or other waterborne disease outbreaks. The MBSAP in Newfoundland and Labrador is consistent with the recommendations of the Walkerton Report and in many areas has exceeded them.

The components of the MBSAP include:

- source protection
- water treatment
- operation and maintenance of water supply systems
- comprehensive drinking water quality monitoring and reporting
- appropriate inspection, abatement and enforcement measures
- operator education and training

Further information on the MBSAP for drinking water safety is contained in the Drinking Water Safety Annual Report 2002, available on the Department of Environment web site (www.gov.nf.ca/env).

WORKING TOGETHER

Implementing this program to ensure water safety is a collaborative effort of several provincial government departments. Each department has its own specific responsibilities, and all work together to monitor progress and address challenges.

Environment

- Responsible for source protection and management, regulatory approvals for construction, operation and maintenance of public water systems, and subsequent inspection and follow-up.
- Responsible for drinking water quality monitoring and reporting related to chemical and physical parameters.
- Responsible for developing and implementing corrective measures to address drinking water quality problems.
- Responsible for assisting in the review of capital works applications relating to public water supply systems.
- Provides operator education and training.
- Takes the lead on water quality related communications with municipalities and communities.

Government Services and Lands

- Responsible for bacteriological monitoring and chlorine residual testing of public water supplies and the bacteriological testing of private water supplies.
- Responsible for providing advice and consultation to public and private water supply owners.

Health and Community Services

- Responsible for assessing the health impacts of chemical and microbiological test results.
- Responsible for providing appropriate advice on potential health impacts of test results.
- Responsible for operating the provincial Public Health Laboratory, which oversees testing and quality control for microbiological sampling of water.
- Responsible for developing policy and guidelines for bacteriological monitoring of public and private water supplies.

Municipal and Provincial Affairs

- Responsible for developing and enforcing water system construction standards.
- Responsible for the administration of the Capital Works Program, which provides funding for new and upgraded public water system infrastructure.
- Provides funding to assist with expansion or upgrade and repair of existing infrastructure.
- Facilitates communications with municipalities and communities.
- Can assist, in emergency situations, in the operation of public water supply systems.

WHAT WE'VE ACCOMPLISHED

Since 2001, Government has focused on strengthening our Multi-barrier Strategic Action Plan. We have achieved several important milestones toward ensuring a reliable supply of clean and safe drinking water.

- ✓ New legislation
- ✓ Updated standards
- ✓ Additional source protection
- ✓ Enhanced resources

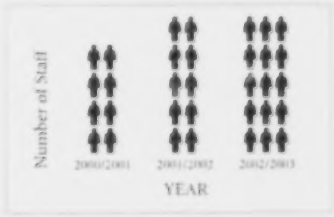
In Spring 2002, Government adopted the new *Environmental Protection Act* and the new *Water Resources Act*, which provide for the fair allocation and proper use of water and ensure that water quality is protected.

Government amended provincial standards for bacteriological safety of drinking water, including application of standards to private wells.

- Nine new protected water supply areas have been designated in the province.
- Through the Department of Municipal and Provincial Affairs, $13.4 million has been provided to 173 projects throughout the province, under the Disinfection Assistance Program.
- 50 contracts have been awarded for chlorination projects and chlorine test kits for municipalities throughout the province.
- Information on water quality testing has been made more readily available, especially on Government's web site.
- A Geographic Information Systems layer is being developed for both protected and unprotected public water supply and well-head areas. This will be used to promote responsible land use within public water supply areas, while maintaining the integrity of drinking water sources.
- The Department of Environment has carried out numerous operator training seminars and expanded drinking water quality monitoring. New training staff and new equipment is currently being procured.
- Bacteriological water quality monitoring has been improved and expanded.

Public Health Laboratory Funding - enhancing our bacteriological testing programs

Drinking Water Monitoring Program - the science of safety



MOVING FORWARD

While much progress has been made in improving drinking water safety, Government recognizes that many challenges remain. However, we are confident that the Multi-barrier Strategic Action Plan for drinking water safety can and will be achieved.

We have three objectives for our public water supply: drinking water must be safe, clean and secure. By safe we mean that it must be free of all pathogens (viruses, bacteria and protozoa) and any quantity of substances that may be harmful to a person's health (for example, arsenic, lead, THMs). Water must be clean: that is, it must be free of unpleasant taste, colour, particles or odor. Finally, water must be secure, meaning that Newfoundlanders and Labradorians can depend on having enough water to meet their requirements every single day of the year.

Whenever one of these objectives is not met, for whatever reason, there is a challenge. Some challenges we are focusing on are the need to boil water to ensure that the water is safe or to carry out other treatment to remove unacceptable concentrations of substances. Some drinking water, while perfectly safe, does not look pleasing due to elevated levels of colour or suspended particles or sediment.

On each of these issues Government is meeting the challenge.

While many activities and resources have focused on improving water quality in the province, Government recognizes that a continuous approach toward drinking water safety is required. Therefore, the following long-term goals have been designated:

- The Department of Government Services and Lands has allocated $458,000 to hire seven new Environmental Health Officers, to expand bacteriological water quality monitoring.
- Chemical water quality monitoring will be expanded to cover all public water supplies.
- An expanded bacteriological monitoring program will be introduced.
- The Department of Environment will hire a full-time system analyst to maintain drinking water data and to publish related information.
- The Department of Health and Community Services will increase the capacity of the Newfoundland Public Health Laboratory.
- The Department of Environment has allocated $530,000 for an on-site operator training program.
- Additionally, over the next three years, the Department of Municipal and Provincial Affairs will dedicate a significant portion of funding to drinking water and water treatment projects.
- Over $170 million will be invested in water supply and distribution systems by Government over the next three years.
- The Department of Health and Community Services will hire an environmental health promotion specialist to conduct a health promotion program addressing clean and safe drinking water.

Water quality is important to the people of our province, and Government is working on many fronts to ensure a reliable supply of clean and safe drinking water for all Newfoundlanders and Labradorians. Substantial progress has been made and substantial resources have been committed to ensure further progress - this year and in years to come.

WATER QUALITY MEANS WATER CONFIDENCE.

FOR MORE INFORMATION:

Government Service Centres

(Department of Government Services and Lands)

St. John's	729-3699
Clarenville	466-4060
Corner Brook	637-2204
Gander	256-1420
Happy Valley - Goose Bay	896-2661
Grand Falls - Windsor	292-4206
Harbour Grace	945-3014

Sub Offices

Grand Bank	832-1672
Lewisporte	535-0262
Stephenville	643-8650
St. Anthony	454-8833
Port aux Basques	695-2835

Water Resources Division

(Department of Environment)

St. John's	729-2563
Grand Falls - Windsor	292-4280
Corner Brook	637-2431

Medical Officers of Health

St. John's	738-4906
Eastern	229-1571
Central	651-3306
Western	637-5245
St. Anthony	454-3333
Happy Valley - Goose Bay	897-2328

WATER QUALITY
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GOVERNMENT OF
NEWFOUNDLAND AND LABRADOR
Department of Environment